



Auto-CrushIR™
Programmable Hydraulic Press

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Jan. 1, 2011

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Introduction

The Auto-CrushIR™ is a 15 US ton (13.6 metric ton) programmable hydraulic press ideal for making KBr transmission pellet samples such as KBr pellets and thin films with heated platens for FTIR analysis. With its digital pressure reading, the Auto-CrushIR™ provides excellent reproducibility and efficient operation. Using the touch screen, the hydraulic press may be run in a manual mode or automatic mode, which allows up to five steps to be programmed. Its adjustable open port design allows for easy insertion and removal of the pellet press and heated platens.

The PIKE Auto-CrushIR includes a transparent protective shield making it safe for operation in a busy laboratory environment. Access for vacuum hose and other utilities is made through a port in the rear of the press. The adjustable die stop provides flexibility for die designs of short and long dimensions yielding an open stand range from 2 to 4.5 inches (5 to 11.5 cm). The efficient-sized ram stroke of 0.22 inches (5.6 mm) and adjustable die stop screw speeds up pellet making by minimizing the time required to achieve the desired force.

All mechanical components of the press are enclosed in a metal cabinet. The access area is protected by a high-impact polymer shield.

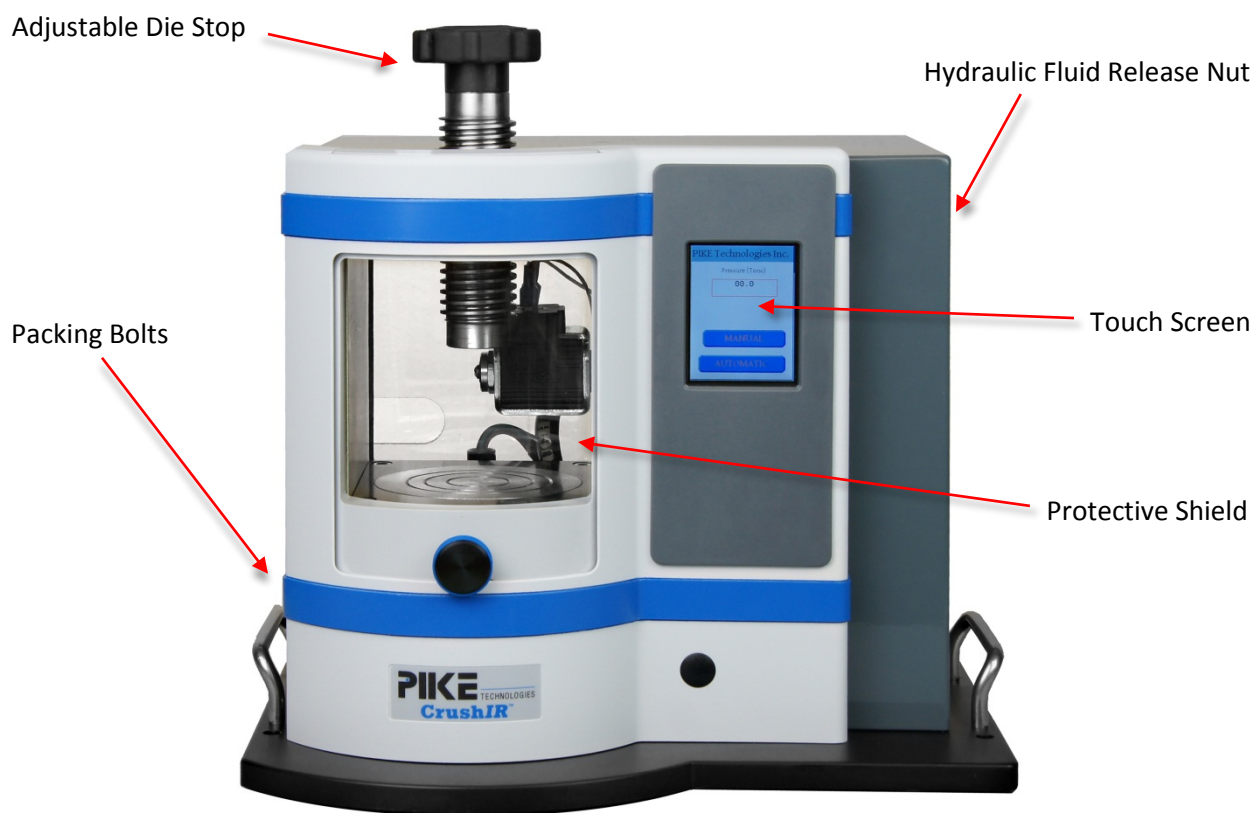


Figure 1: Front view of the Auto-CrushIR Programmable Hydraulic Press

Unpacking Your Accessory

In order for you to quickly verify receipt of your accessory, we have included a packing list. Please inspect the contents of the shipping box carefully. Contact PIKE immediately if any discrepancies are found.

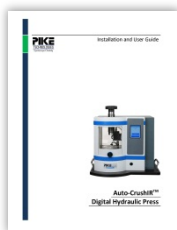
The Auto-CrushIR is packed in a wooden shipping box. Remove screws from the box to take off the cover of the shipping box. Remove the 4 packing bolts located at the corners of the Auto-CrushIR base plate. Lift the Auto-CrushIR and put it into place where it will be used to make pellets.



CAUTION: The Auto-CrushIR is heavy, weighing 90 lb., 36.3 kg. Obtain help to lift and move the Auto-CrushIR Programmable Hydraulic Press.

Packing List

Auto-CrushIR Manual
PN 350-1811300
Quantity 1



Auto-CrushIR
PN 181-1300
Quantity 1



Power Cord
Quantity 1



3/16" Allen Hex Wrench
PN 410-0058
Quantity 1



Fuse
Quantity 2
PN 615-001800p



Installation

Using the 3/16" allen hex wrench, fully loosen the hydraulic fluid-retaining screw located at the right, upper side of the Auto-CrushIR.

NOTE: The Auto-CrushIR will not function unless this screw is loosened. Always close the fluid-retaining screw to transport or tilt the Auto-CrushIR.

The Auto-CrushIR is available in a 115 or 220 V version. Install the power cord into the rear of the Auto-CrushIR programmable hydraulic press. Turn the power switch located on the back of the press to the *on* position. Figure 2 shows the home screen that is displayed upon powering up the press. The digital display will read 00.0 when no force is applied.

The force reading on the Auto-CrushIR digital display is shown in units of US tons.

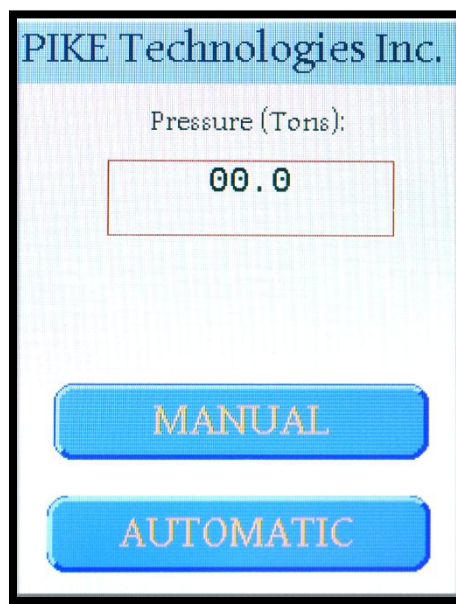


Figure 2: Home screen of the Auto-CrushIR Programmable Hydraulic Press (units in US tons)

Using Your Hydraulic Press

Place your pellet press into the Auto-CrushIR adjusting the die stop as needed to provide a comfortable amount of clearance. Position the pellet press so that it's top and bottom are centered relative to the die stop and the hydraulic ram. Close the protective shield. There is a safety switch, which is engaged when the protective shield is closed. The Auto-CrushIR will not operate while the shield is in the *up* position.

From the home screen the mode of operation may be selected as either manual or automatic. If the touch screen display is not on the home screen, press the RETURN button on the screen until the home screen appears.



Caution: Be sure the pellet press is centered on the bottom ram and the adjustable die stop is screwed firmly against the top of the pellet press. Failure to properly set the adjustable die stop against the object to which force is being applied will cause a malfunction.

Manual Mode

The manual mode of operation allows the user to set and release a load. Select the manual mode by pressing the MANUAL button from the home screen. To operate, continue pressing the INC (increase) button until the desired force is obtained. To stop increasing the force, remove the touch pressure to the INC button. The hydraulic pump will automatically shut off if the INC button is held on for longer than 8 seconds. If after 8 seconds the desired force is not achieved, release the INC button and repress to continue increasing the applied force. The force will hold until the REL (release) button is touched.

WARNING: In the case of the PIKE Evacuatable Pellet Press and the PIKE Heated Platens Accessory, the maximum force is 10 US tons. Never exceed the maximum force rating of the pellet press.

NOTE: KBr powder is soft and compressible. When maximum force is applied to the powder it is normal for the digital reading to drop initially before it settles and reaches a steady-state reading.

Be sure the pellet press is centered on the bottom ram and the adjustable die stop is screwed firmly against the top of the pellet press prior to operating the press in manual or automatic mode. Failure to properly set the adjustable die stop against the object to which force is being applied will cause a malfunction. Please see the precaution section of this manual for additional details.

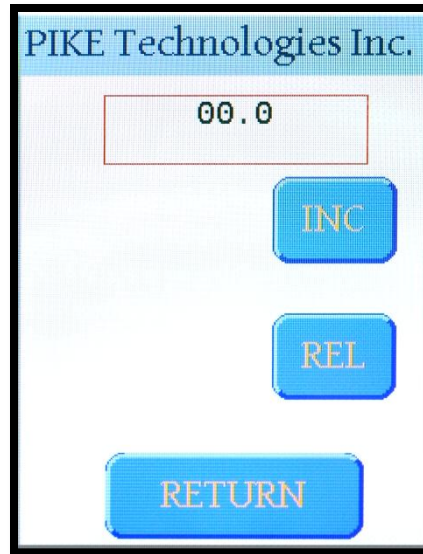


Figure 3: Manual mode screen

Automatic Mode

The automatic mode allows the user to program up to five force-time steps. Select the automatic mode by pressing the automatic button from the home screen. Figure 4 shows the screen listing the programmed parameters, steps 1 – 5. The force and hold time duration is shown.

Current Parameters		
Step Number	Final Pressure	Hold Time
1	2.00	6
2	2.50	6
3	4.50	4
4	0.00	6
5	2.00	6

Below the table, there are three blue buttons with yellow text: "Change", "START", and "RETURN".

Figure 4: Automatic programmed parameters

To alter the existing program, touch the Change button. A screen to edit step 1 of 5 will be shown (Figure 5). Select the pressure by touching and holding either the INC (increase) or DEC (decrease) button. Repeat the procedure for the hold time.

To advance to step 2 of the program select NEXT and follow the instructions described above to select the pressure and hold times. If less than five steps are required set the unneeded steps at a final pressure value of zero. When a relaxation time is required, as shown in step 4 of the example shown in Figure 4, set the final pressure to zero and the hold time equal to the relaxation time.

Touch the RETURN button when the program edits are complete, which will return you to the Automatic page listing the program parameters (Figure 4). Press the start button to implement the program. Be sure the pellet press is centered on the bottom ram and the adjustable die stop is screwed firmly against the top of the pellet press. Failure to properly set the adjustable die stop against the object to which force is being applied will cause a malfunction.

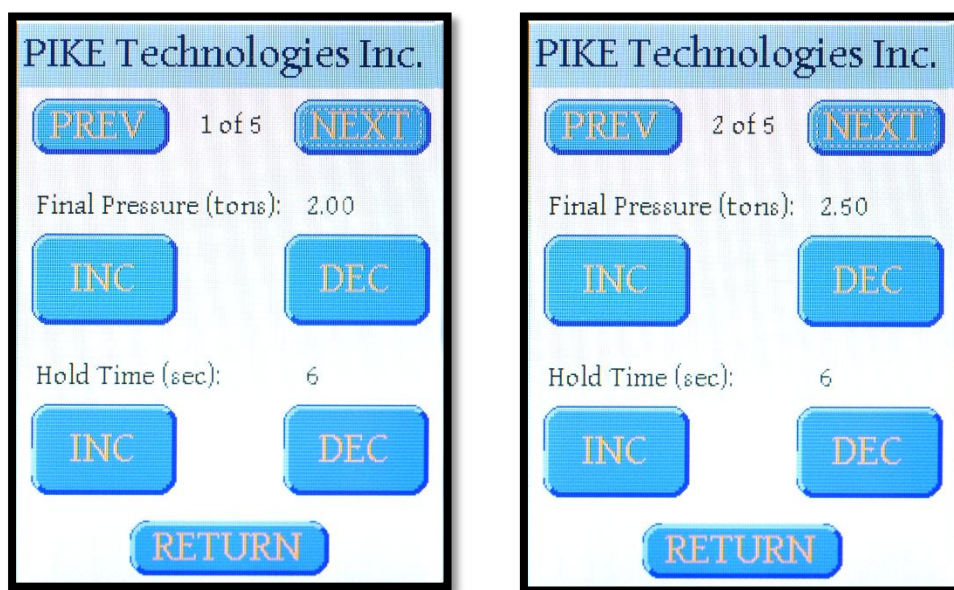


Figure 5: Automatic mode edit screens for step 1 and 2

While the program is running, the five steps are shown on the touch screen (Figure 6). The active step is highlighted in green. When the program steps have been fully executed press the return button to return to the tabular program screen and access the start button. To stop the automatic program at any time during a run, touch CANCEL.

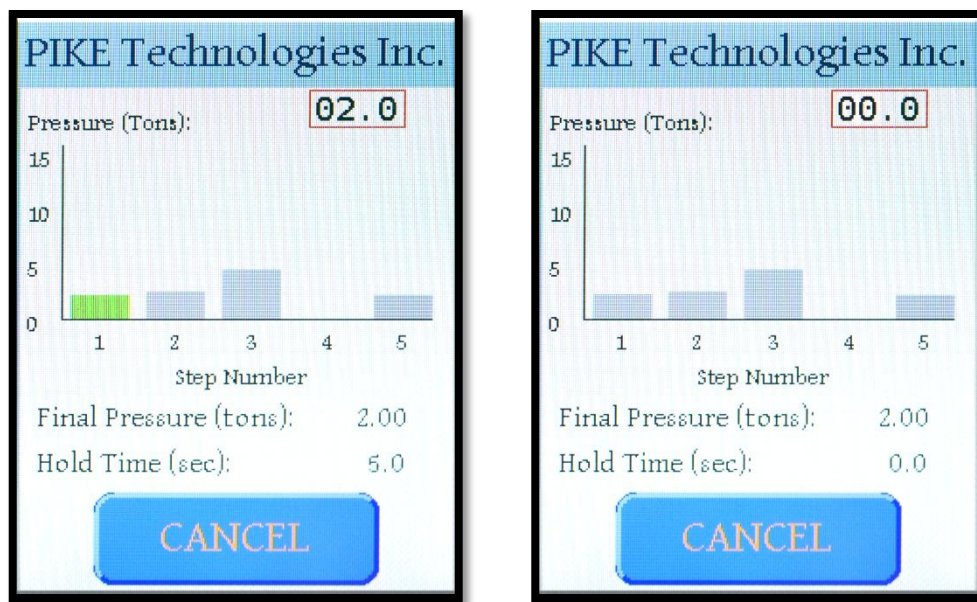


Figure 6: Screen shown during an automated run (A) and after the run is completed (B)

Precautions

Maximum Force



The Auto-CrushIR can deliver up to 15 tons of force. Do not exceed the maximum force rating of the pellet press. For example, the PIKE Evacuatable Pellet Press has a maximum force rating of 10 tons. Carefully review the user manual for your pellet press to find its maximum force rating. Exceeding the maximum force rating will result in damage to the pellet press.

Transporting/Moving Hydraulic Press

The fluid-retaining screw must be released before using the Auto-CrushIR (see page 5). The fluid-retaining screw must be secured (closed) if you transport the Auto-CrushIR or if you need to tilt it or lay it on its side. Failure to follow these procedures will result in non-operation and/or leaking of fluid.

Operation

Be sure the pellet press is centered on the bottom ram and the adjustable die stop is screwed firmly against the top of the pellet press. Failure to properly set the adjustable die stop against the object to which force is being applied will cause the moveable lower ram to become lodged in the fully up position. If this should happen the hydraulic pump will shut off.

To reposition the lower ram, put a metal piece to act as a spacer between the lower ram and the adjustable die screw. In the manual mode press and hold the REL button in 3 second cycles while turning the adjustable die stop clockwise with the provided 5/16" hex wrench.

Safety



Always close the transparent protective shield before applying force to the pellet press.

Failure to follow this procedure could result in physical injury to the operator. Additionally, the protective shield in the *down* position triggers a safety switch to allow Auto-CrushIR operation. When the shield is in the *up* position the Auto-CrushIR touch panel is disabled and the press will not operate. Protection provided by the equipment may be impaired if the equipment is used with accessories not provided or recommended by the manufacturer, or is used in a manner not specified by the manufacturer.

Periodically inspect the external power cord, transparent protective shield, and other parts for damage. If any damage is observed, do not use the equipment and contact PIKE Technologies for replacement parts.

Do not position the equipment in a space where it is difficult to disconnect the power cord at the rear of the equipment.

Environmental Ratings

Installation Category II:	(Transient Over-voltage)
Pollution Degree 2:	(Temporary conductivity caused by condensation)
Altitude Limit:	2,000 meters
Usage:	Indoor
Ambient Temperature:	40 °C max
Humidity:	80% RH non-condensing

Cleaning Procedures

Clean the Auto-CrushIR Hydraulic Press using a cloth dampened with water.

Clean the Pellet Press and any residual KBr powder using water. Dry thoroughly after cleaning.

Decontamination not required.

Equipment Voltage Ratings

External Power Required: 115VAC (not selectable – preset at the factory)
50/60 Hz, 13 Amps max
Use grounded, three prong plug
Fuse input with 8A@250V Time Lag



Do not remove covers. Refer servicing to qualified personnel.

Power Supply Symbol Definitions

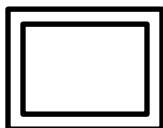
DC direct current:



AC alternating current:

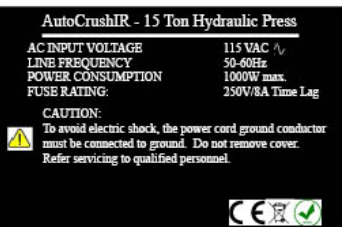


Equipment protected throughout by double or reinforced insulation:



Special Handling Requirements for KBr Powder

Read and follow the MSDS sheet recommendations for the KBr powder prior to use. Observe all safety precautions and procedures while handling the KBr powder and finished pressed pellets. Follow MSDS recommended clean-up, spill procedures for the KBr powder.

Label	Description	Location
	CE marking indicates the accessory complies with the essential requirements of the relevant European health, safety and environmental protection legislations.	This symbol is located on the backside of the hydraulic press accessory.
	The crossed out wheeled bin is a clear reminder that the product must not be disposed with household waste. It is the responsibility of the buyer to discard the product in accordance with federal, regional, and local environmental regulations.	This symbol is located on the backside of the hydraulic press accessory.
	The RoHS symbol indicates this product is free from RoHS prohibited elements and compounds (Pb, Cd, Hg, Hex-Cr, PBB, and PBDE).	This symbol is located on the backside of the hydraulic press accessory.
	This label indicates power consumption information.	This symbol is located on the backside of the hydraulic press accessory.

Replacement Parts and Options

The following parts and options may be ordered for the Auto-CrushIR accessory:

Part Number	Description
410-0058	3/16" Allen Wrench

Other PIKE products available for use with the Hydraulic Press:

160-8010	KBr Powder 100g
161-1900	13 mm Pellet Press Die Kit
161-1070	ShakIR, Heavy Duty Sample Grinder
161-5050	Agate Mortar and Pestle, 50 mm
181-2000	PIKE Heated Platens Accessory
076-1220	Digital Temperature Control Module (required for Heated Platens)
162-5300	Magnetic Pellet Holder
162-5410	Sample Card – for 13 mm Pellets (10)



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